EXPLORATION PLAN

Submitted by:

Northwest Carbon Corporation

For:

Tie Fork & Rilda Canyons Area

TIE FORK CANYON - CENTRAL UTAH

1. The following people are responsible for operations under the plan described below, and notices and orders should be delivered to any one of them:

E. Peter Matthies, Vice President, (801) 534-3559;
Al Amundson, Chief Engineer, (801) 534-3329; and
Robert T. Johnson, Senior Engineer, (801) 534-3391; all with address at
Northwest Carbon Corporation
Post Office Box 1526
Salt Lake City, Utah 84110

The area which is the subject of this exploration plan is owned in its entirety by the U. S. Government. Therefore, there are no other owners of record of the parcel's surface or subsurface minerals.

2. The following description pertains to the area where exploration is to be conducted and to the potential effect of applicant's operation.

(i) Geology

The areas of interest are located in Sec. 10 and Sec. 11, T 16 S, R 7 E, Salt Lake Meridian. These land areas are generally located east of the Huntington Creek Canyon, approximately 12 miles northwest of Huntington, Utah, as shown in the attached map. The west portion of the property is on very steeply sloping canyon walls of up to 60% incline. The central and eastern portions of the property are more gently sloping and vary from flat to approximately 20% incline.

The Hiawatha coal seam outcrops on the west portion of the property with an approximate thickness of 5 - 11 feet. It is expected that the overburden will reach 2,000 feet toward the east end of Section 11. From the description of the existing environment given in the Final Environmental Statement for Central Utah, coal is expected to be found in alternating shale and sandstone beds of the lower 1/3 of the Black Hawk formation. Under this formation lies the 1,000 foot thick Starpoint sandstone formation. There are four major faults in a north-south direction through the property. Fault displacement on the east is approximately 100 feet. One set of two faults runs through the center of Section 10 and another set of two faults runs across the west edge of Section 11. Other minor faults may exist across the property and may be found during exploration.

The Hiawatha Seam is the lower of the two available seams lying on top of the Starpoint Sandstone. On the basis of outcrop investigation, coal thickness ranges from 8 to 10 feet. The rock immediately overlying the Hiawatha Seam appears to consist of interbedded shales, sands and coal.

The Blind Canyon Seam is approximately 60 to 80 feet above the Hiawatha Seam and averages about 8 ft. in thickness. The overlying roof rock appears to be very stable material.

From general observations, the coal appears to be sloping about 4° to the southwest. All coal in the area is of bituminous quality, suitable for the steam market. Coal quality is expected to approximate 12,200 BTU per pound, with a 0.7% sulfur content. Further exploration will supply more complete figures.

(ii) Water

From the Regional Analysis of the Final Environmental Statement for Central Utah, the mean annual precipitation for the area of interest varies between 16 and 24 inches. As is explained in more detail in the Site Specific Analysis for the McKinnon properties, this precipitation is largely in the form of snow and summer rain cloudbursts, and is caused mainly by the atmospheric conditions created by air moving along the up-slope on the western side of the Wasatch Plateau. The Huntington Creek is the major source of drainage for the area, in a northwest to southeast direction.

To the north of the property lies Tie Fork Canyon; to the east is the Left Fork of the Cedar Creek, that runs in a west-east direction into the Huntington Creek. Most of the immediate drainage is of an intermittent type, flowing into the perennial Huntington Creek. Ground water flow from this area is expected to be similar to that associated with the McKinnon properties. The flow would probably follow the pattern of the surface water courses as a result of the fracturing associated with the faults in the area.

(iii) Vegetation

The vegetation over the property is similar to that outlined in the Final Environmental Statement for Central Utah with reference to the Belina Mines and the McKinnon Mines. The northern slopes, because of their steepness, do not propagate vegetation. The upper areas are largely covered with conifer and aspen type trees on the north-facing slopes and aspen interspersed with mountain meadows on the south-facing slopes. Because of the high elevation, which ranges from 7200 feet to 9200 feet, mountain brush and ponderosa pine are also found. (Figure II-14 of Final E.I.S. shows the typical vegetation according to elevation).

(iv) Fish Habitat

Huntington Creek, the northernmost tributary of the San Rafel River, originates on the Wasatch Plateau and flows in a southeast direction. The headwaters of the Huntington Creek come from the Electric Lake, which is a 476-acre reservoir managed for cut-throat trout. The area of the Creek north of the Electric Lake is closed for fishing. Twenty-two miles of the Huntington Creek, between the Electric Lake Dam and the main river diversion, bear cut-throat, brown, and rainbow trout. Brown and rainbow are stocked annually while cut-throats are naturally reproduced in the stream. Below the main diversion the Creek is dewatered for irrigation, and the return water downstream is too low in quality to support game fish. No endangered species are known to inhabit the waters of the area.

(v) Wildlife

The Wasatch Plateau is one of the major areas of mule deer population, which represents the main wildlife species in this property. One of the three major elk herd units in Central Utah is also in this area. North of the lands of interest, moose are present in the Fish Creek area, bordering with the Moose Management District. Also known to exist in the area are cougar and black bear.

Smaller species of wildlife include cottontail and snowshoe rabbit, pheasant, quail, and grouse. The property abuts an area which has been designated as potential black-footed ferret range because of sightings directly southwest, south, and north. Actual presence of the animal is difficult to determine because of its night-time existence. Peregrine falcons have also been sighted in the area, but they are thought to be migratory birds rather than native of the area.

East of the property is a bald eagle roosting site. Bald eagles are winter visitors to the region between the months of November and March. They often congregate in groups at roost areas near food sources. Golden eagles are found throughout the region and several active eyries are present. Because established roads into the area will be used for access to most of the exploration locations, the area's fish and animal habitats will not be disturbed.

(vi) Present Land Use

The land including and adjacent to the area to be explored is part of the Manti-LaSal National Forest, characterized in large part by natural vegetation and grazing for wild animal species. Some land surrounding the area is steeply sloping and cannot support vegetation or animal habitation.

3. The following description concerns the exploration operations to be conducted by applicant on the land under application:

(i) Method of Exploration and Types of Equipment to be Used

The proposed exploration will consist of drilling two holes in Section 10 and three holes in Section 11, T 16 S, R 7 E, SLM. Geophysical logging of these holes and two seismic lines are planned. The projected locations of these holes in Lease U-24316 are approximately as follows, as indicated on the attached map:

1. SW 1/4 SE 1/4, Sec. 10, T 16 S, R 7 E, SLM
2. SE 1/4 NE 1/4, Sec. 10, T 16 S, R 7 E, SLM
3. SW 1/4 SW 1/4, Sec. 11, T 16 S, R 7 E, SLM
4. SE 1/4 NW 1/4, Sec. 11, T 16 S, R 7 E, SLM
5. NE 1/4 SE 1/4, Sec. 11, T 16 S, R 7 E, SLM

These holes will be drilled from the surface to the depth of the underlying sandstone. At least one of the holes will be core-drilled from approximately 200 ft. above the coal-bearing member to the underlying sandstone member, and a geophysical log will be taken on that hole. The remaining holes will be plug-drilled and logged geophysically. The expected depth of all holes is approximately 2,000 ft. Equipment will consist of one or more truck-mounted drill rigs, water trucks, and several pick-up trucks. Additional access roads (as indicated on the attached map) will be built using a D-8 caterpillar (or its equivalent).

Two seismic logs will be run across the property. One will run from approximately the east-central boundary of Section 11 to the west-central boundary, or to the coal outcrop on the west edge of Section 10. The second seismic line will be run across the northern portion of Section 15 from the northeast 1/4 corner to the coal outcrop in the northwest 1/4.

(ii) Prevention of Damage to the Environment

For fire prevention, each rig, water truck, and pick-up truck will be equipped with a fire extinguisher. Drilling sump water will also be used in the event of a fire.

Soil disturbance will be kept to a minimum and all disturbed areas will be graded in such a manner that excessive soil erosion will be minimized. For the most part, existing access roads into the area will be used. Construction of additional roads for the proposed exploration operations will be kept at a minimum, as shown in the attached map.

Surface waters that run across the disturbed areas will be diverted into the sump used for drilling operations. This will prevent waters crossing the disturbed area from entering into natural drainages. No ephemeral, intermittent, or perennial streams will be diverted during these exploration activities. In the event ground water were encountered during drilling activities, the natural cementing of the drilling operation would keep drilling muds from contaminating it. All aquifers encountered will be cemented off as each hole is plugged upon completion of drilling.

The only significant air-born emissions from the exploration operation will be amounts of suspended particles and fugitive dusts created by traffic on access roads. Travel on these roads will be intermittent and activities are not expected to create significant amounts of particulate matter. Most dust particles will be large enough to rapidly settle out of the atmosphere. Since most drilling operations will be using water as a drilling medium, no significant amount of dust will be released.

Significant impact on natural wildlife is not expected, because most roads are already existing and only two small access roads are planned. The drilling location is remote from any populated area or controlled public activities so that no hazard to public health and safety will exist. As explained above, no fish habitat is present in the vicinity.

(iii) Plugging of Drill Holes

All drill holes will be plugged in accordance with USGS standards. Cuttings will be disposed of down the hole or scattered. The entire length of the hole will be plugged with cement. All aquifers will therefore be cemented off on each side of the water-bearing zone.

(iv) Surface Reclamation

Immediately following the completion of drilling activities and plugging of drill holes, the disturbed land area will be reclaimed in accordance with surface mining regulations. The drillsites will be back-filled to conform will the surrounding terrain, water barred where necessary, tilled with shovels or portable roto-tillers to loosen the soil, and reseeded with the mixture specified by the authorized officers. Slash material pushed aside during clearing operations will be scattered over the area. Debris will be hauled away. Topsoil will be stockpiled prior to operations and replaced during reclamation. Where the area is steep, it will be terraced to prevent deterioration of the soil prior to the re-establishment of vegetation. Planting will be done by the broadcast method for grasses and undergrowth-type vegetation. Shrubs, if necessary, will be planted by starter plants.

4. Timetable

Drilling operations are expected to begin as soon as possible after drilling of the Rilda Canyon property in the summer of 1980. Operations are presently anticipated to last approximately two months. Construction of additional access roads could begin in late June or mid-July after sufficient drying of the surface. D-8 caterpillar work will be done in such a manner that unnecessary erosion of the soil from continual spring and early summer runoff will be avoided. Completion of operations is expected by October, 1980. If postponement is necessary, work will be completed the spring of 1981.

5. Topographic Maps

The attached map shows topographic and drainage features within the property. No bodies of water are known to exist.

6. Additional Information

The area has not been surveyed for cultural, paleontological, or other known site specific determinations. During access road construction, drilling, and drillsite establishment, general surveys will be conducted to assure that no existing cultural locations are destroyed.

The major source of impact on terrestial fauna will result from surface disturbance and increased human activity. Increase in human activity and vehicular traffic in the area will result in the harassment of a variety

of wildlife species, such as deer, small mammals, and birds. The relatively small amount of surface disturbance will make these impacts minor. Due to the remote location of the drillsites, very few people will view the operations.

Adverse environmental effects will be short in duration. Dust, noise, personnel, and vehicular traffic will be intermittent, and will have little effect on plant and animal life. Soil disturbances will be minimal and all disturbed areas will be properly graded and/or reseeded. The activity will be monitored by inspections, and adverse environmental effects reduced as much as possible. The remoteness of the drillsite locations will minimize public irritation.

There are no alternatives to the proposed plan. If the coal is to be mined, additional information is required to develop mining plans. Exploration by drillhole methods is necessary to determine existence, thickness, and quality of coal, and to investigate the overburden rock structure for use in mine planning. Drilling will cause the least adverse environmental effect of known exploration methods, including shaft sinking and trenching.

RILDA CANYON - CENTRAL UTAH

1. The following people are responsible for operations under the plan described below, and notices and orders should be delivered to any one of them:

E. Peter Matthies, Vice President, (801) 534-3559;
Al Amundson, Chief Engineer, (801) 534-3329; and
Robert T. Johnson, Senior Engineer, (801) 534-3391; all with address at
Northwest Carbon Corporation
Post Office Box 1526
Salt Lake City, Utah 84110

The area which is the subject of this exploration plan is owned partly by the U. S. Government and partly by the State of Utah; applicant owns leases to mine coal from the two governmental entities, as specified below with respect to each tract.

2. The following description pertains to the area where exploration is to be conducted and to the potential effect of applicant's operations:

(i) Geology

The tracts of interest are located in Secs. 31 and 32, T 16 S, R 7 E; Sec. 36, T 16 S, R 6 E; and Sec. 2, T 17 S, R 6 E of SLM. These lands are generally located west of the Huntington Creek Canyon, approximately 12 miles northwest of Huntington, Utah, as shown in the attached map. The north portion of the property is on a steep canyon wall with slopes of up to 60% incline. The remaining portion consists of more gentle terrain varying from flat to approximately 20% incline.

The Hiawatha coal bed outcrops north and east of the property with an approximate thickness of 5-11 feet. It is expected that the overburden will reach 2,000 feet toward the west end of Section 31. From the description of the existing environment, as given in the Final Environmental Statement for Central Utah, coal should be found in alternating shale and sandstone beds of the lower 1/3 of the Black Hawk formation. The 1,000 ft. thick Starpoint sandstone formation lies underneath. There are major faults to the west of the property. It is expected that small displacement areas or a definite fracture system may exist.

The Hiawatha Seam is the lower of the two available seams lying on top of the Starpoint Sandstone. On the basis of outcrop investigation, coal thickness ranges from 8 to 10 feet. The rock immediately overlying the Hiawatha Seam appears to consist of interbedded shales, sands and coal.

The Blind Canyon Seam is approximately 60 to 80 feet above the Hiawatha Seam and averages about 8 ft. in thickness. The overlying roof rock appears to be very stable material.

From general observations, the coal appears to be sloping about 4^{o} to the southwest. All coal in the area is of bituminous quality, suitable for the steam market and comparable to the product of the Helco Mine, the portals of which are located on the property. Coal quality is expected to approximate 12,200 BTU per pound, with a 0.7% sulfur content. Further exploration will supply more complete figures.

(ii) Water

From the Regional Analysis of the Final Environmental Statement for Central Utah, the mean annual precipitation for the area of interest varies between 16 and 24 inches. As is explained in more detail in the Site Specific Analysis for the McKinnon properties, this precipitation is largely in the form of snow and summer rain cloudbursts, and is caused mainly by the atmospheric conditions created by air moving along the up-slope on the western side of the Wasatch Plateau. The Huntington Creek is the major source of drainage for the area, in a northwest to southeast direction.

To the north of the property lies Rilda Canyon, that runs from west to east into the Huntington Creek Canyon. West of the property is the Cottonwood Creek drainage. Most of the immediate drainage is of an intermittent type, flowing into the perennial Huntington Creek. Ground water flow from this area is expected to be similar to that associated with the McKinnon properties. The flow would probably follow the pattern of the surface water courses as a result of the fracturing associated with the faults in the area.

(iii) Vegetation

The vegetation over the property is similar to that outlined in the Final Environmental Statement for Central Utah with reference to the Belina Mines and the McKinnon Mines. The northern slopes, because of their steepness, do not propagate vegetation. The upper areas are largely covered with conifer and aspen type trees on the north-facing slopes and aspen interspersed with mountain meadows on the south-facing slopes. Because of the high elevation, which ranges from 7200 feet to 9900 feet, mountain brush and ponderosa pine are also found. (Figure II-14 of Final E.I.S. shows the typical vegetation according to elevation).

(iv) Fish Habitat

The Huntington Creek, the northernmost tributary of the San Rafael River, originates on the Wasatch Plateau and flows in a southeast direction. The headwaters of the Huntington Creek come from the Electric Lake, which is a 476-acre reservoir managed for cut-throat trout. The area of the Creek north of the Electric Lake is closed

for fishing. Twenty-two miles of the Huntington Creek, between the Electric Lake Dam and the main river diversion, bear cut-throat, brown, and rainbow trout. Brown and rainbow are stocked annually while cut-throats are naturally reproduced in the stream. Below the main diversion the Creek is dewatered for irrigation, and the return water downstream is too low in quality to support game fish. No endangered species are known to inhabit the waters of the area.

(v) Wildlife

The Wasatch Plateau is one of the major areas of mule deer population, which represents the main wildlife species in this property. One of the three major elk herd units in Central Utah is also in this area. North of the lands of interest, moose are present in the Fish Creek area, bordering with the Moose Management District. Also known to exist in the area are cougar and black bear.

Smaller species of wildlife include cottontail and snowshoe rabbit, pheasant, quail, and grouse. The property abuts an area which has been designated as potential black-footed ferret range because of sightings directly southwest, south, and north. Actual presence of the animal is difficult to determine because of its night-time existence. Peregrine falcons have also been sighted in the area, but they are thought to be migratory birds rather than native of the area.

East of the property is a bald eagle roosting site. Bald eagles are winter visitors to the region between the months of November and March. They often congregate in groups at roost areas near food sources. Golden eagles are found throughout the region and several active eyries are present. Because established roads into the area will be used for access to most of the exploration locations, the area's fish and animal habitats will not be disturbed.

(vi) Present Land Use

The land including and adjacent to the area to be explored is part of the Manti-LaSal National Forest, characterized in large part by natural vegetation and grazing for wild animal species. Some land surrounding the area is steeply sloping and cannot support vegetation or animal habitation.

3. The following description concerns the exploration operations to be conducted by applicant on the land under application:

(i) Method of Exploration and Types of Equipment to be Used

The proposed exploration will consist of drilling two holes in Sec. 36, T 16 S, R 6 E, SLM; one hole in Sec. 31, T 16 S, R 7 E, SLM; and one hole in Sec. 2, T 17 S, R 6 E, SLM. The planned locations of these holes are approximately as follows, as indicated on the attached map:

1. SE 1/4 NW 1/4 Sec. 36, T 16 S, R 6 E, SLM in Utah State Lease ML-22509
2. SW 1/4 NE 1/4 Sec. 2, T 17 S, R 6 E, SLM, in Utah State Lease ML-23177
3. SE 1/4 NW 1/4 Sec. 31, T 16 S, R 7 E, SLM, in U.S. Lease U-7635
4. NW 1/4 SE 1/4 Sec. 36, T 16 S, R 6 E, SLM, in Utah State Lease ML-22509

These holes will be drilled from the surface to the depth of the underlying sandstone. At least one of the holes will be core-drilled from approximately 200 ft. above the coal bearing member to the underlying sandstone member, and a geophysical log will be taken on that hole. The remaining holes will be plug-drilled and logged geophysically. The expected depth of all holes is approximately 2,000 ft. Equipment will consist of one or more truck-mounted drill rigs, water trucks, and several pick-up trucks. Additional access roads (as indicated on the attached map) will be built using a D-8 caterpillar (or its equivalent).

(ii) Prevention of Damage to the Environment

For fire prevention, each rig, water truck, and pick-up truck will be equipped with a fire extinguisher. Drilling sump water will also be used in the event of a fire.

Soil disturbance will be kept to a minimum and all disturbed areas will be graded in such a manner that excessive soil erosion will be minimized. For the most part, existing access roads into the area will be used. Construction of additional roads for the proposed exploration operations will be kept at a minimum, as shown in the attached map.

Surface waters that run across the disturbed areas will be diverted into the sump used for drilling operations. This will prevent waters crossing the disturbed area from entering into natural drainages. No ephemeral, intermittent, or perennial streams will be diverted during these exploration activities. In the event ground water were encountered during drilling activities, the natural cementing of the drilling operation would keep drilling muds from contaminating it. All aquifers encountered will be cemented off as each hole is plugged upon completion of drilling.

The only significant air-born emissions from the exploration operation will be amounts of suspended particles and fugitive dusts created by traffic on access roads. Travel on these roads will be intermittent and activities are not expected to create significant amounts of particulate matter. Most dust particles will be large enough to rapidly settle out of the atmosphere. Since most drilling operations will be using water as a drilling medium, no significant amount of dust will be released.

Significant impact on natural wildlife is not expected, because most roads are already existing and only two small access roads are planned. The drilling location is remote from any populated area or controlled public activities so that no hazard to public health and safety will exist. As explained above, no fish habitat is present in the vicinity.

(iii) Plugging of Drill Holes

All drill holes will be plugged in accordance with USGS standards. Cuttings will be disposed of down the hole or scattered. The entire length of the hole will be plugged with cement. All aquifers will therefore be cemented off on each side of the water-bearing zone.

(iv) Surface Reclamation

Immediately following the completion of drilling activities and plugging of drill holes, the disturbed land area will be reclaimed in accordance with surface mining regulations. The drillsites will be back-filled to conform with the surrounding terrain, water barred where necessary, tilled with shovels or portable roto-tillers to loosen the soil, and reseeded with the mixture specified by the authorized officers. Slash material pushed aside during clearing operations will be scattered over the area. Debris will be hauled away. Topsoil will be stockpiled prior to operations and replaced during reclamation. Where the area is steep, it will be terraced to prevent deterioration of the soil prior to the re-establishment of vegetation. Planting will be done by the broadcast method for grasses and undergrowth-type vegetation. Shrubs, if necessary, will be planted by starter plants.

4. Timetable

Drilling operations are expected to begin as soon as possible during the summer of 1980. Accessibility to the area after snow-melt and spring drainage will determine start-up. Operations are presently anticipated to last approximately four months. Construction of additional access roads could begin in late June or mid-July after sufficient drying of the surface. D-8 caterpillar work will be done in such a manner that unnecessary erosion of the soil from continual spring and early summer runoff will be avoided. Completion of operations is expected by December, 1980. If postponement is necessary, work will be completed during the spring of 1981.

5. Topographic Maps

The attached map shows topographic and drainage features within the property. No bodies of water are known to exist.

6. Additional Information

The area has not been surveyed for cultural, paleontological, or other known site specific determinations. During access road construction, drilling, and drillsite establishment, general surveys will be conducted to assure that no existing cultural locations are destroyed.

The major source of impact on terrestial fauna will result from surface disturbance and increased human activity. Increase in human activity and vehicular traffic in the area will result in the harassment of a variety of wildlife species, such as deer, small mammals, and birds. The relatively small amount of surface disturbance will make these impacts minor. Due to the remote location of the drillsites, very few people will view the operations.

Adverse environmental effects will be short in duration. Dust, noise, personnel, and vehicular traffic will be intermittent, and will have little effect on plant and animal life. Soil disturbances will be minimal and all disturbed areas will be properly graded and/or reseeded. The activity will be monitored by inspections, and adverse environmental effects reduced as much as possible. The remoteness of the drillsite locations will minimize public irritation.

There are no alternatives to the proposed plan. If the coal is to be mined, additional information is required to develop mining plans. Exploration by drillhole methods is necessary to determine existence, thickness, and quality of coal, and to investigate the overburden rock structure for use in mine planning. Drilling will cause the least adverse environmental effect of known exploration methods, including shaft sinking and trenching.